



**FAA**  
**Commercial Space  
Transportation**



# Quarterly Launch Report 1st Quarter 2007

Featuring Launch Results from the 4th Quarter 2006 and  
Forecasts for the 1st and 2nd Quarter 2007

Cover Image: Courtesy of Sea Launch

## Introduction

*The First Quarter 2007 Quarterly Launch Report features launch results from the fourth quarter of 2006 (October-December 2006) and forecasts for the first quarter of 2007 (January-March 2007) and the second quarter of 2007 (April-June 2007). This report contains information on worldwide commercial, civil, and military orbital and commercial suborbital space launch events. Projected launches have been identified from open sources, including industry references, company manifests, periodicals, and government sources. Projected launches are subject to change.*

*This report highlights commercial launch activities, classifying commercial launches as one or both of the following:*

- *Internationally-competed launch events (i.e., launch opportunities considered available in principle to competitors in the international launch services market)*
- *Any launches licensed by the Office of Commercial Space Transportation of the Federal Aviation Administration under 49 United States Code Subtitle IX, Chapter 701 (formerly the Commercial Space Launch Act)*

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Cover (photo courtesy of Sea Launch, copyright © 2006): A Sea Launch Zenit 3SL at the Port of Long Beach, California prior to transport to the Equator. On October 30, 2006, the vehicle lifted off from Odyssey Launch Platform in the Pacific Ocean carrying XM 4, a commercial communications satellite operated by XM Radio.

## Fourth Quarter 2006 Highlights

On October 20 and 21, the 2006 Wirefly X Prize Cup was held in Las Cruces, New Mexico. The 2006 Wirefly X Prize Cup, a launch vehicle and space technology exposition, featured such competitions as the Lunar Lander Challenge, Vertical Rocket Challenge, and the Space Elevator Games. The competitions are designed to both heighten public awareness and interest in the commercial space sector and provide cash prize incentives to encourage private vehicle developers to create new launchers and other technologies. Highlights of the X Prize Cup included demonstration flights as well as Armadillo Aerospace's participation in the Lunar Lander Challenge. In pursuit of the Lunar Lander Challenge prize, Armadillo Aerospace conducted five test flights of its Pixel vehicle. While none of the attempts succeeded in capturing the prize, Armadillo and other organizations plan to compete again in the 2007 X Prize Cup.

On November 8, 2006, the newly merged Rocketplane Kistler (RpK) announced that Alliant Techsystems (ATK) will become lead contractor for the development, assembly, integration, and testing of the K-1 vehicle.

On November 13, 2006, Blue Origin, the private space venture founded by Amazon.com CEO Jeff Bezos, conducted the first test flight in development of its New Shepard suborbital reusable launch vehicle program. Although details about the flight were initially undisclosed, Blue Origin subsequently reported that Goddard, a prototype of the New Shepard, had reached an altitude of over 85 meters during a 30-second flight staged from the West Texas spaceport owned by the company.

On November 30, 2006, the European Space Agency (ESA) successfully tested the Italian-built Zefiro 23 P80 first-stage solid propellant motor for its upcoming Vega small launch vehicle. The Vega, whose maiden flight is slated for 2008, is expected to be able to carry payloads weighing up to 1,500 kilograms to low Earth orbit (LEO).

In November, the U.S. Air Force (USAF) announced the award of a \$674 million contract to The Boeing Company to provide follow-on Delta 4 launch services at Vandenberg Air Force Base (VAFB), California, starting in September 2007. The contract was awarded as part of the Evolved Expendable Launch Vehicle (EELV) Buy 3 process.

Also in November, the Indian Space Research Organization (ISRO) discussed plans to launch a Mars orbiter in 2013 using its Geostationary Satellite Launch Vehicle (GSLV). The probe would study the Martian atmosphere, subsoil and terrain. India is also planning its first manned space mission, with a target date of 2014.

On December 1, The Boeing Company and Lockheed Martin formally completed their agreement to jointly address the government launch market under the auspices of the United Launch Alliance (ULA). The merger, first proposed in May 2005 and finally approved by federal regulators on October 4, 2006, will combine the production, engineering, test, and launch operations for U.S. government launches of Boeing Delta and Lockheed Martin Atlas rockets. On December 14, a Delta 2 rocket carried a classified National Reconnaissance Office (NRO) satellite into orbit, marking the first launch carried out by the ULA.

On December 9, 2006, Shuttle Discovery lifted off from Kennedy Space Center (KSC) on flight STS 116, a resupply and assembly mission to the International Space Station (ISS). The flight, which also deployed several experimental microsatellites on behalf of the U.S. military, marked the fourth Space Shuttle return-to-flight mission. Shuttle Discovery landed safely on December 22, 2006.

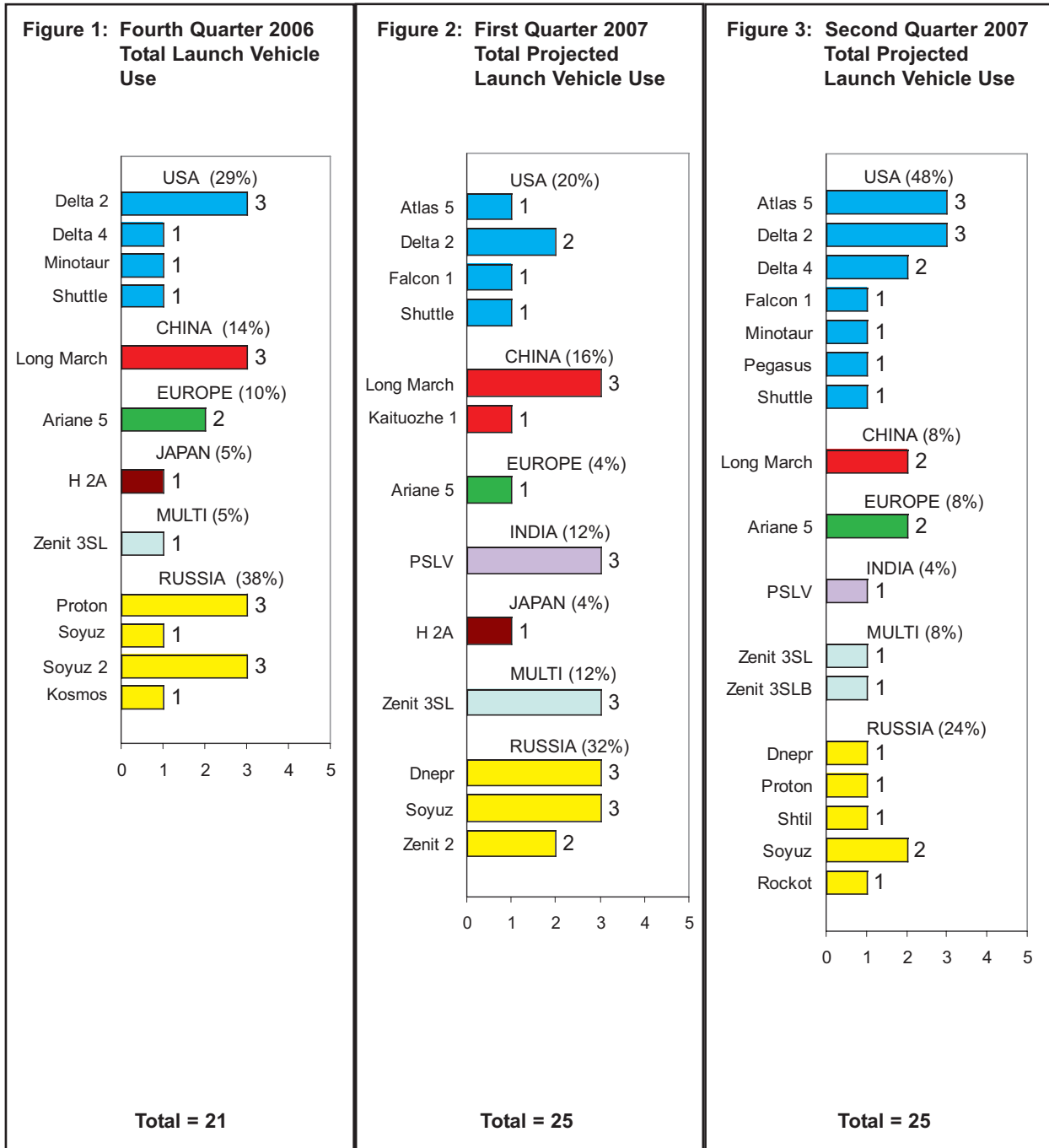
In December, the National Aeronautics and Space Administration (NASA) publicly elaborated on plans to establish a manned lunar base by 2025. The base would be open to commercial activity as well as participation by international partners.

Also in December, the National Space Agency of Ukraine discussed plans to debut a new launch vehicle named Mayak in 2010. The booster would essentially be a combination of the Tsyklon and Zenit boosters. Meanwhile, Ukraine is continuing to collaborate with Brazil in developing the Tsyklon 4 booster, scheduled to begin launching from the Brazilian spaceport Alcantara in 2009.

On December 16, the first launch from the commercial Mid-Atlantic Regional Spaceport (MARS) took place when a Minotaur vehicle lifted off from the site, co-located with NASA's Wallops Flight Facility, and deployed the TacSat 2 and GeneSat 1 payloads in LEO.

Vehicle Use

(October 2006 – June 2007)

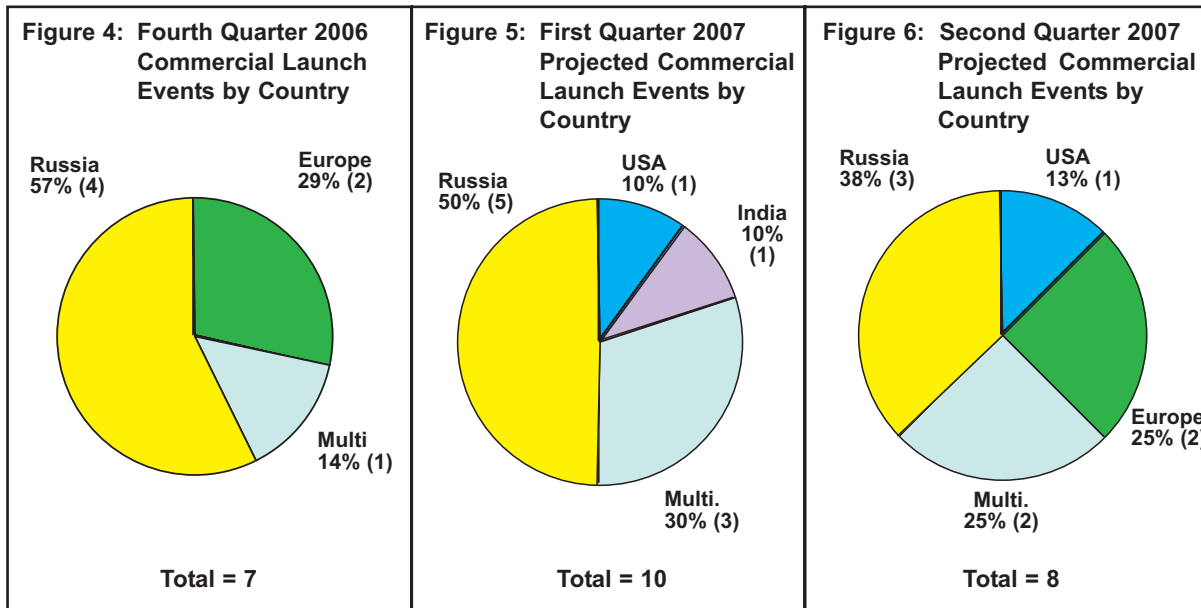


Figures 1-3 show the total number of orbital and commercial suborbital launches of each launch vehicle and the resulting market share that occurred in the fourth quarter of 2006, as well as projecting this information for the first quarter of 2007 and second quarter of 2007. The launches are grouped by the country in which the primary vehicle manufacturer is based. Exceptions to this grouping are launches performed by Sea Launch, which are designated as multinational.

**Note:** Percentages for these and subsequent figures may not add up to 100 percent due to rounding of individual values.

**Commercial Launch Events by Country**

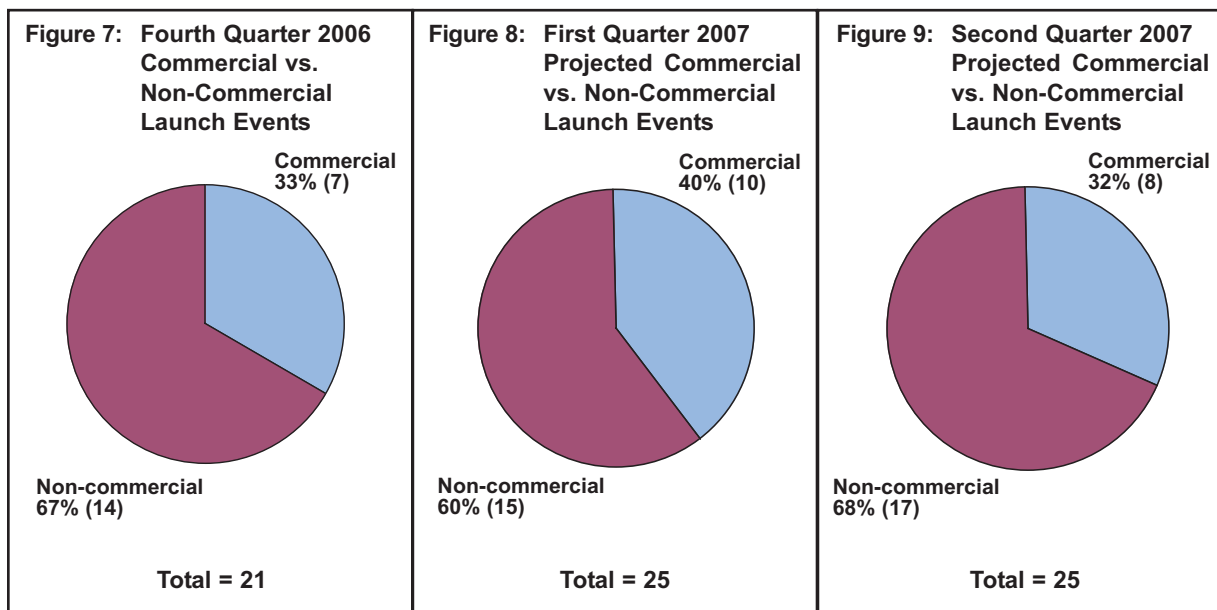
(October 2006 – June 2007)



Figures 4-6 show all *commercial* orbital and suborbital launch events that occurred in the fourth quarter of 2006 and that are projected for the first quarter of 2007 and second quarter of 2007.

**Commercial vs. Non-Commercial Launch Events**

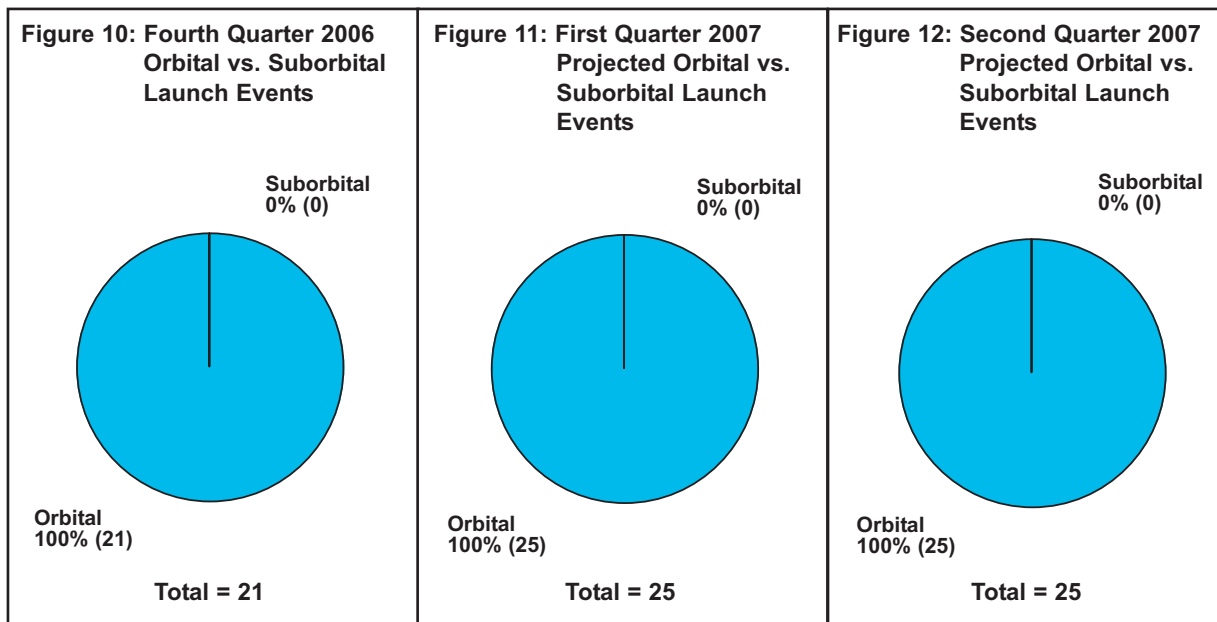
(October 2006 – June 2007)



Figures 7-9 show commercial vs. non-commercial orbital and suborbital launch events that occurred in the fourth quarter of 2006 and that are projected for the first quarter of 2007 and second quarter of 2007.

**Orbital vs. Suborbital Launch Events**

(October 2006 – June 2007)



Figures 10-12 show orbital vs. commercial suborbital launch events that occurred in the fourth quarter of 2006 and that are projected for the first quarter of 2007 and second quarter of 2007.

**Launch Successes vs. Failures**

(October 2006 – December 2006)

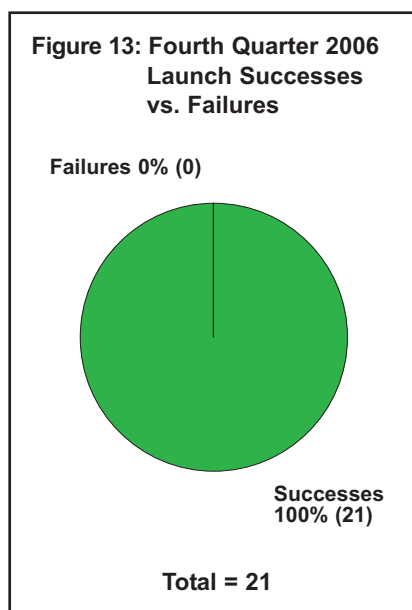
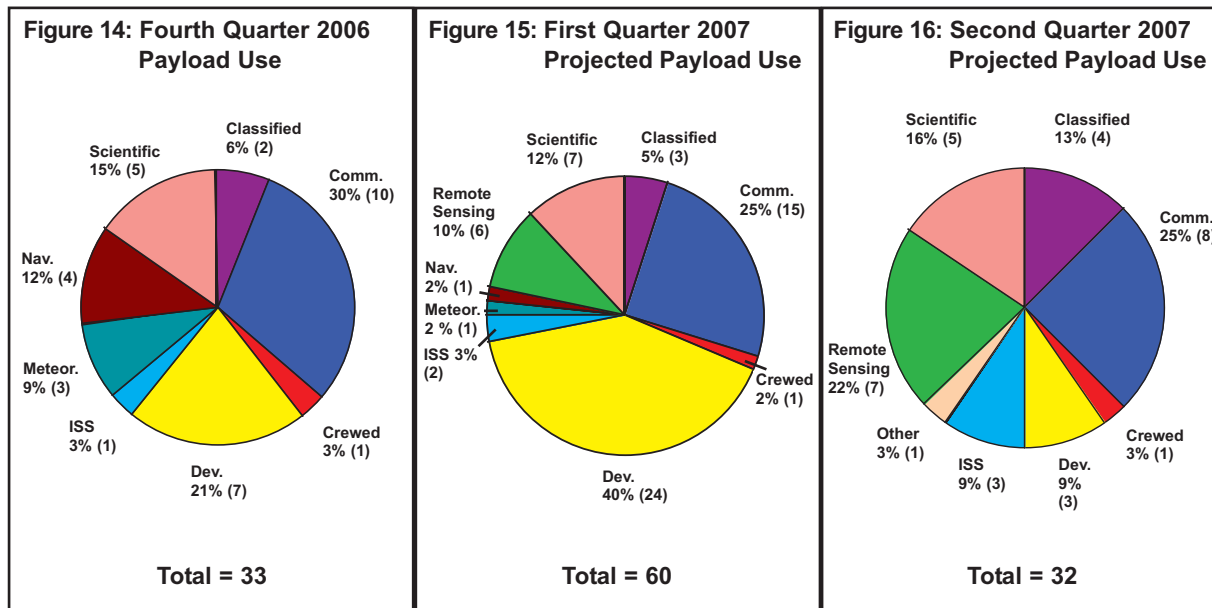


Figure 13 shows orbital and commercial suborbital launch successes vs. failures for the period from October 2006 to December 2006. Partially-successful orbital launch events are those where the launch vehicle fails to deploy its payload to the appropriate orbit, but the payload is able to reach a useable orbit via its own propulsion systems. Cases in which the payload is unable to reach a useable orbit or would use all of its fuel to do so are considered failures.



**Payload Use (Orbital Launches Only)**

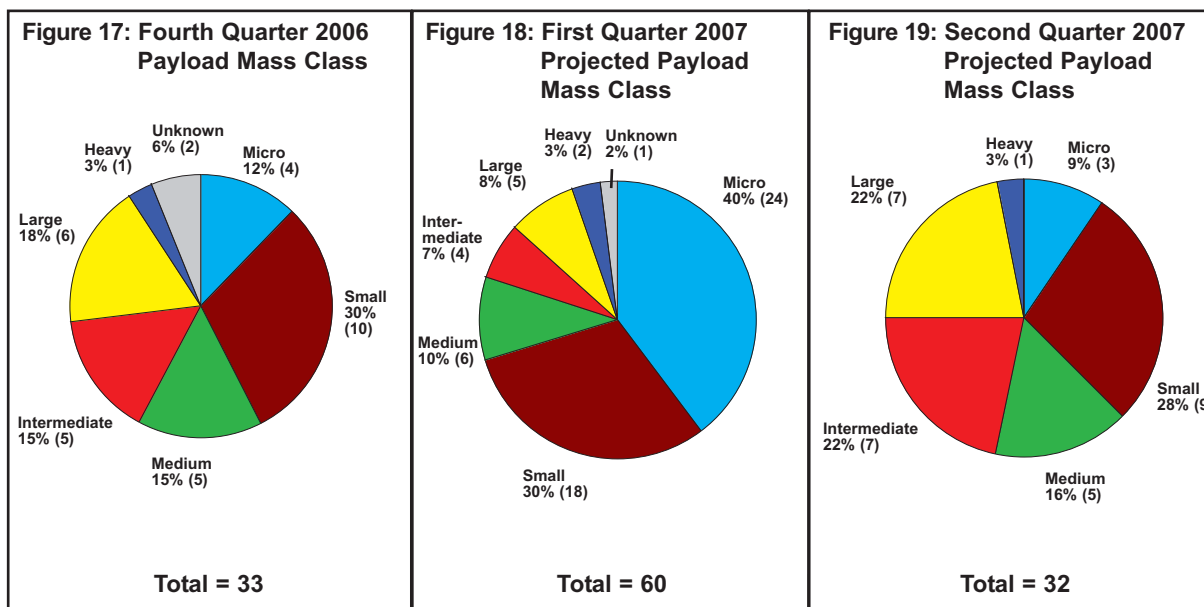
(October 2006 – June 2007)



Figures 14-16 show total payload use (commercial and government), actual for the fourth quarter of 2006 and projected for the first quarter of 2007 and second quarter of 2007. The total number of payloads launched may not equal the total number of launches due to multi-manifesting, i.e., the launching of more than one payload by a single launch vehicle.

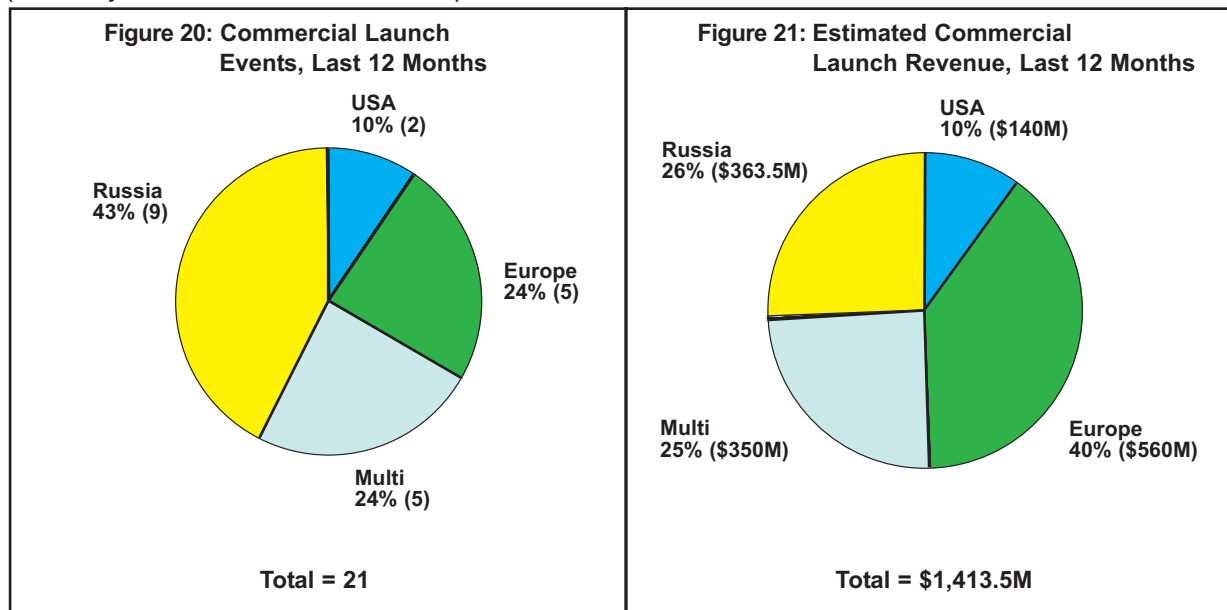
**Payload Mass Class (Orbital Launches Only)**

(October 2006 – June 2007)



Figures 17-19 show total payloads by mass class (commercial and government), actual for the fourth quarter of 2006 and projected for the first quarter of 2007 and second quarter of 2007. The total number of payloads launched may not equal the total number of launches due to multi-manifesting, i.e., the launching of more than one payload by a single launch vehicle. Payload mass classes are defined as Micro: 0 to 91 kilograms (0 to 200 lbs.); Small: 92 to 907 kilograms (201 to 2,000 lbs.); Medium: 908 to 2,268 kilograms (2,001 to 5,000 lbs.); Intermediate: 2,269 to 4,536 kilograms (5,001 to 10,000 lbs.); Large: 4,537 to 9,072 kilograms (10,001 to 20,000 lbs.); and Heavy: over 9,072 kilograms (20,000 lbs.).

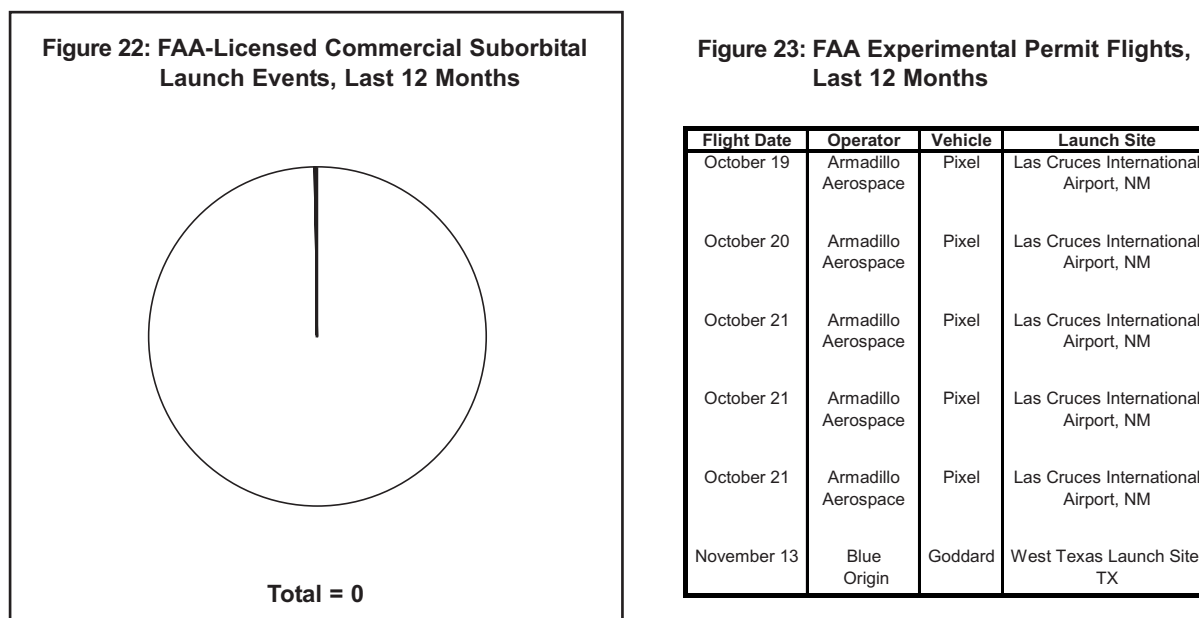
**Commercial Launch Trends (Orbital Launches Only)**  
(January 2006 – December 2006)



**Figure 20** shows commercial orbital launch events for the period of January 2006 to December 2006 by country.

**Figure 21** shows estimated commercial launch revenue for orbital launches for the period of January 2006 to December 2006 by country.

**Commercial Launch Trends (Suborbital Launches and Experimental Permits)**  
(January 2006 – December 2006)



**Figure 22** shows FAA-licensed commercial suborbital launch events for the period of January 2006 to December 2006 by country.

**Figure 23** shows suborbital flights conducted under FAA experimental permits for the period of January 2006 to December 2006.



**Commercial Launch History**  
(January 2002 – December 2006)

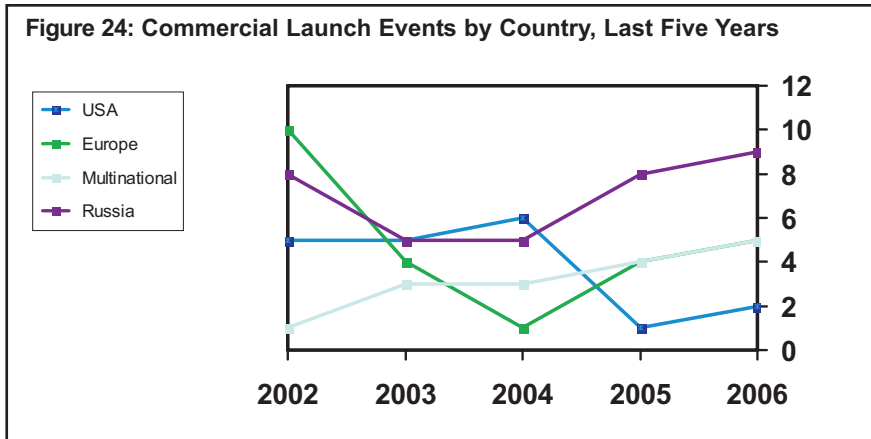


Figure 24 shows commercial launch events by country for the last five full calendar years.

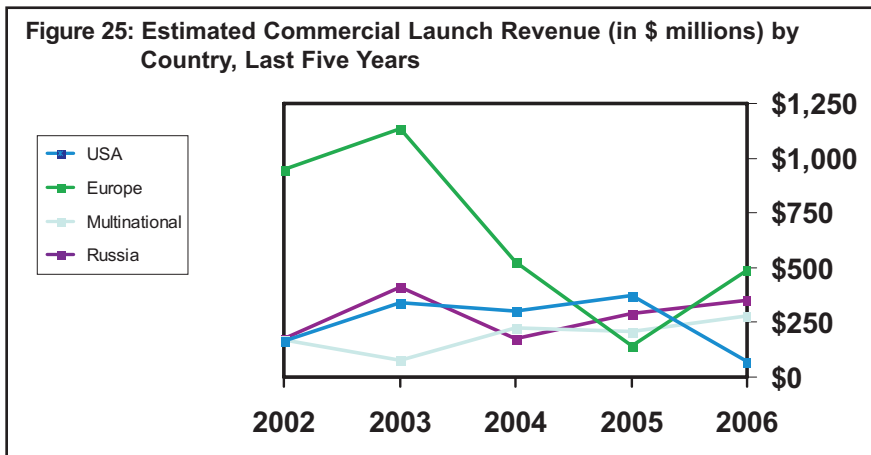


Figure 25 shows estimated commercial launch revenue by country for the last five full calendar years.

# First Quarter 2007 Quarterly Launch Report

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| Fourth Quarter 2006 Orbital and Suborbital Launch Events |                   |                         |                             |                                     |                |               |   |   |
|--|-------------------|-------------------------|-----------------------------|-------------------------------------|----------------|---------------|---|---|
| Date   | Vehicle           | Site                    | Payload or Mission Operator |                                     | Use            | Vehicle Price | L | M |
| 10/13/2006   | √ Ariane 5 ECA    | Kourou                  | * DirecTV 9S                | DirecTV                             | Communications | \$140M        | S | S |
|  |                   |                         | LDREX 2                     | JAXA                                | Development    |               |   | S |
|  |                   |                         | * Optus D1                  | Singtel/Optus                       | Communications |               |   | S |
| 10/19/2006   | Soyuz 2 1A        | Baikonur                | Metop A                     | Eumetsat                            | Meteorological | \$40M         | S | S |
| 10/23/2006   | Soyuz             | Baikonur                | Progress ISS 23P            | Roscosmos                           | ISS            | \$40M         | S | S |
| 10/24/2006   | Long March 4B     | Taiyuan                 | SJ 6C                       | China - TBA                         | Scientific     | \$50M         | S | S |
|  |                   |                         | SJ 6D                       | China - TBA                         | Scientific     |               |   | S |
| 10/25/2006   | Delta 2 7925H-10L | CCAFS                   | STEREO A                    | NASA                                | Scientific     | \$50M         | S | S |
|  |                   |                         | STEREO B                    | NASA                                | Scientific     |               |   | S |
| 10/29/2006   | Long March 3B     | Xichang                 | * Sinosat 2                 | Sino-Satellite Communications       | Communications | \$60M         | S | F |
| 10/30/2006   | √ + Zenit 3SL     | Odyssey Launch Platform | * XM 4                      | XM Radio                            | Communications | \$70M         | S | S |
| 11/4/2006  | Delta 4 Medium    | VAFB                    | DMSP 5D-3-F17               | DoD                                 | Meteorological | \$70M         | S | S |
| 11/9/2006  | √ Proton M        | Baikonur                | * BADR-4                    | Arabsat                             | Communications | \$70M         | S | S |
| 11/17/2006   | Delta 2 7925-10   | CCAFS                   | Navstar GPS 2RM-3           | USAF                                | Navigation     | \$50M         | S | S |
| 12/8/2006  | √ Ariane 5 ECA    | Kourou                  | * WildBlue 1                | WildBlue Communications             | Communications | \$140M        | S | S |
|  |                   |                         | * AMC 18                    | SES Americom                        | Communications |               |   | S |
| 12/8/2006  | Long March 3A     | Xichang                 | Fengyun 2D                  | China Meteorological Administration | Meteorological | \$50M         | S | S |
| 12/9/2006  | Shuttle Discovery | KSC                     | STS 116                     | NASA                                | Crewed         | N/A           | S | S |
|  |                   |                         | ANDE                        | US Naval Academy                    | Development    |               |   | S |
|  |                   |                         | MARScorn                    | US Navy                             | Development    |               |   | S |
|  |                   |                         | MEPSI-2                     | US Navy                             | Development    |               |   | S |
|  |                   |                         | RAFT-1                      | US Navy                             | Development    |               |   | S |
| 12/12/2006   | √ Proton M        | Baikonur                | * Measat 3                  | MEASAT                              | Communications | \$70M         | S | S |
| 12/14/2006   | Delta 2 7920      | VAFB                    | NRO L-21                    | NRO                                 | Classified     | \$50M         | S | S |
| 12/16/2006   | Minotaur          | Wallops Flight Facility | TacSat 2                    | USAF                                | Development    | \$14.5M       | S | S |
|  |                   |                         | GeneSat 1                   | NASA                                | Development    |               |   | S |
| 12/18/2006   | H 2A 204          | Tanegashima             | ETS 8                       | JAXA                                | Communications | \$85M         | S | S |
| 12/19/2006   | √ Kosmos 3M       | Plesetsk                | SAR Lupe 1                  | German MoD                          | Classified     | \$12M         | S | S |
| 12/24/2006   | Soyuz 2 1A        | Plesetsk                | Meridian                    | Russian MoD                         | Communications | \$40M         | S | S |
| 12/25/2006   | Proton (SL-12)    | Baikonur                | Glonass K R4                | Russian MoD                         | Navigation     | \$72.5M       | S | S |
|  |                   |                         | Glonass K R5                | Russian MoD                         | Navigation     |               |   | S |
|  |                   |                         | Glonass K R6                | Russian MoD                         | Navigation     |               |   | S |
| 12/27/2006   | √ Soyuz 2 1B      | Baikonur                | Corot                       | CNES                                | Scientific     | \$40M         | S | S |

√ Denotes commercial launch, defined as a launch that is internationally competed or FAA-licensed. For multiple manifested launches, certain secondary payloads whose launches were commercially procured may also constitute a commercial launch. Appendix includes suborbital launches only when such launches are commercial.

+ Denotes FAA-licensed launch.

\* Denotes a commercial payload, defined as a spacecraft that serves a commercial function or is operated by a commercial entity.

Notes: All prices are estimates, and vary for each commercial launch. Government mission prices may be higher than commercial prices. Ariane 5 payloads are usually multi-manifested, but the pairing of satellites scheduled for each launch is sometimes undisclosed for proprietary reasons until shortly before the launch date.

# First Quarter 2007 Quarterly Launch Report

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| First Quarter 2007 Projected Orbital and Suborbital Launch Events |                 |                            |                                |  |                |               |
|---|-----------------|----------------------------|--------------------------------|--|----------------|---------------|
| Date  | Vehicle         | Site                       | Payload or Mission             | Operator                                 | Use            | Vehicle Price |
| 1/10/2007   | PSLV            | Satish Dhawan Space Center | Cartosat 2                     | ISRO                                     | Remote Sensing | \$20M         |
|   |                 |                            | LAPAN-TUBSAT                   | LPAN                                     | Development    |               |
|   |                 |                            | PehuenSat                      | Universidad Nacional del Comahue         | Development    |               |
| 1/18/2007   | Soyuz           | Baikonur                   | SRE 1                          | ISRO                                     | Development    |               |
| 1/25/2007   | √ + Zenit 3SL   | Odyssey Launch Platform    | * Progress ISS 24P             | Roscosmos                                | ISS            | \$40M         |
|   |                 |                            | * NSS 8                        | SES New Skies                            | Communications | \$70M         |
| 1/2007  | Kaituoazhe 1    | Taiyuan                    | PS 2 Test                      | CNSA                                     | Development    | \$10M         |
| 1/2007  | Zenit 2         | Baikonur                   | Kosmos TBA 2                   | Russian MoD                              | Classified     | \$37.5M       |
| 2/15/2007   | Delta 2 7925-10 | CCAFS                      | THEMIS 1                       | NASA                                     | Scientific     | \$50M         |
|   |                 |                            | THEMIS 2                       | NASA                                     | Scientific     |               |
|   |                 |                            | THEMIS 3                       | NASA                                     | Scientific     |               |
|   |                 |                            | THEMIS 4                       | NASA                                     | Scientific     |               |
|   |                 |                            | THEMIS 5                       | NASA                                     | Scientific     |               |
| 2/15/2007   | H 2A TBA        | Tanegashima                | IGS 3B                         | Japanese Defense Agency                  | Classified     | \$85M         |
| 2/22/2007   | Atlas 5 401     | CCAFS                      | Orbital Express 1A             | DARPA                                    | Development    | \$75M         |
|   |                 |                            | Orbital Express 1B             | DARPA                                    | Development    | \$75M         |
|   |                 |                            | Cibola                         | USAF                                     | Development    | \$75M         |
|   |                 |                            | FalconSat 3                    | USAF Academy                             | Development    |               |
|   |                 |                            | MEPSI 4A                       | DARPA                                    | Development    | \$75M         |
|   |                 |                            | MEPSI 4B                       | DARPA                                    | Development    |               |
|   |                 |                            | MIDSTAR 1                      | Naval Postgraduate School                | Development    |               |
|   |                 |                            | NPSAT 1                        | Naval Postgraduate School                | Development    |               |
|   |                 |                            | Space Test Program Satellite 1 | USAF                                     | Development    |               |
| 2/27/2007   | √ Dnepr 1       | Baikonur                   | * TerraSAR X                   | Infoterra                                | Remote Sensing | \$9.5M        |
| 2/2007  | Ariane 5G       | Kourou                     | * Insat 4B                     | ISRO                                     | Communications | \$140M        |
|   |                 |                            | Skynet 5A                      | UK MoD                                   | Communications |               |
| 2/2007  | √ Dnepr 1       | Baikonur                   | * Genesis Pathfinder 2         | Bigelow Aerospace                        | Development    | \$9.5M        |
| 2/2007  | √ + Zenit 3SL   | Odyssey Launch Platform    | * Thuraya 3                    | Thuraya Satellite Communications Company | Communications | \$70M         |
| 2/2007  | Falcon 1        | Kwajalein Island           | Falcon Demosat                 | DARPA                                    | Development    | \$7M          |

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# First Quarter 2007 Quarterly Launch Report

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| First Quarter 2007 Orbital and Suborbital Launch Events (Continued) |                  |                            |                                     |  |                |               |
|---|------------------|----------------------------|-------------------------------------|--|----------------|---------------|
| Date  | Vehicle          | Site                       | Payload or Mission                  | Operator   | Use            | Vehicle Price |
| 3/16/2007   | Shuttle Atlantis | KSC                        | STS 117                             | NASA   | Crewed         | N/A           |
|   |                  |                            | ISS 13A                             | NASA   | ISS            |               |
| 3/26/2007   | √ Soyuz          | Baikonur                   | * Globalstar Replacement 1          | Globalstar   | Communications | \$40M         |
|   |                  |                            | Globalstar Replacement 2            | Globalstar   | Communications |               |
|   |                  |                            | Globalstar Replacement 3            | Globalstar   | Communications |               |
|   |                  |                            | Globalstar Replacement 4            | Globalstar   | Communications |               |
| 3/2007  | √ + Delta 2 TBA  | VAFB                       | * GeoEye 1                          | GeoEye   | Remote Sensing | \$50M         |
| 3/2007  | Long March 3B    | Xichang                    | Nigerian Communications Satellite-1 | China Aerospace Corporation                              | Communications | \$60M         |
| 3/2007  | √ PSLV           | Satish Dhawan Space Center | AGILE                               | ASI  | Scientific     | \$20M         |
| 3/2007  | PSLV             | Satish Dhawan Space Center | TechSAR                             | Israeli MoD  | Classified     | \$20M         |
| 3/2007  | √ Soyuz          | Baikonur                   | Radarsat 2                          | MacDonald, Dettwiler, and Associates                     | Remote Sensing | \$40M         |
| 3/2007  | Zenit 2          | Baikonur                   | Meteor 3M N2                        | Russian Meteorological Service                           | Meteorological | \$37.5M       |
| 1Q/2007   | Long March 4B    | Taiyuan                    | CBERS/Ziyuan 2B                     | CAST   | Remote Sensing | \$50M         |
| 1Q/2007   | Long March TBA   | Xichang                    | Beidou 2B                           | CAST   | Navigation     | TBA           |
| 1Q/2007   | √ + Zenit 3SL    | Odyssey Launch Platform    | * DirecTV 10                        | DirecTV  | Communications | \$70M         |
| 1Q/2007   | √ Dnepr 1        | Baikonur                   | Egyptosat                           | National Authority for Remote Sensing and Space Sciences | Remote Sensing | \$9.5M        |
|   |                  |                            | Aerocube 2                          | Aerospace Corporation                                    | Development    |               |
|   |                  |                            | AKS 1                               | CNES   | Development    |               |
|   |                  |                            | AKS 2                               | CNES   | Development    |               |
|   |                  |                            | CAPE-1                              | University of Louisiana                                  | Development    |               |
|   |                  |                            | CTSB 1                              | Boeing   | Development    |               |
|   |                  |                            | Libertad 1                          | Universidad de Sergio Arboleda                           | Development    |               |
|   |                  |                            | MAST                                | Stanford University                                      | Development    |               |
|   |                  |                            | Polysat 3                           | Cal Poly Aerospace Engineering                           | Development    |               |
|   |                  |                            | Polysat 4                           | Cal Poly Aerospace Engineering                           | Development    |               |
|   |                  |                            | SaudiComsat 3                       | Space Research Institute                                 | Communications |               |
|   |                  |                            | SaudiComsat 4                       | Space Research Institute                                 | Communications |               |
|   |                  |                            | SaudiComsat 5                       | Space Research Institute                                 | Communications |               |
|   |                  |                            | SaudiComsat 6                       | Space Research Institute                                 | Communications |               |
|   |                  |                            | SaudiComsat 7                       | Space Research Institute                                 | Communications |               |
|   |                  |                            | Saudisat 3                          | Space Research Institute                                 | Scientific     |               |

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+ Denotes FAA-licensed launch.

\* Denotes a commercial payload, defined as a spacecraft that serves a commercial function or is operated by a commercial entity.

Notes: All prices are estimates, and vary for each commercial launch. Government mission prices may be higher than commercial prices.

Ariane 5 payloads are usually multi-manifested, but the pairing of satellites scheduled for each launch is sometimes undisclosed for proprietary reasons until shortly before the launch date.

# First Quarter 2007 Quarterly Launch Report

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| Second Quarter 2007 Projected Orbital and Suborbital Launch Events |                           |                            |  |   |  |               |
|--|---------------------------|----------------------------|--|---|--|---------------|
| Date   | Vehicle                   | Site                       | Payload or Mission   | Operator  | Use  | Vehicle Price |
| 4/1/2007   | Delta 4 Heavy             | CCAFS                      | DSP 23   | USAF  | Classified   | \$155M        |
| 4/9/2007   | Soyuz                     | Baikonur                   | Soyuz ISS 14S  | Roscosmos   | ISS  | \$40M         |
| 4/17/2007  | Long March 3A             | Xichang                    | Chang'e 1  | CNSA  | Scientific   | \$50M         |
| 4/25/2007  | Pegasus XL                | VAFB                       | AIM Explorer   | NASA  | Scientific   | \$16M         |
| 4/30/2007  | Minotaur                  | Wallops Flight Facility    | NFIRE  | Missile Defense Agency  | Development  | \$14.5M       |
| 4/2007   | √ Ariane 5 TBA            | Kourou                     | * AIRTV-1  | AirTV   | Communications   | \$70M         |
| 4/2007   | Shtil                     | Barents Sea                | Kompass 3  | Izmiran and Lebedev Physical Institute                                  | Scientific   | \$1.5M        |
|  |                           |                            | Sumbandila   | University of Stellenbosch  | Development  |               |
| 5/4/2007   | Atlas 5 TBA               | CCAFS                      | NRO L-30   | NRO   | Classified   | \$75M         |
| 5/12/2007  | Soyuz                     | Baikonur                   | Progress ISS 25P   | Roscosmos   | ISS  | \$40M         |
| 5/31/2007  | Delta 2 TBA               | VAFB                       | STSS Block 2010 Risk Reduction   | Missile Defense Agency  | Classified   | \$50M         |
| 5/2007   | Long March 3A             | Xichang                    | * Sinosat 3  | Sino-Satellite Communications   | Communications   | \$50M         |
| 5/2007   | √ Rockot                  | Plesetsk                   | GOCE   | ESA   | Scientific   | \$13.5M       |
| 6/21/2007  | Delta 2 7925H             | CCAFS                      | Dawn   | JPL   | Scientific   | \$50M         |
| 6/28/2007  | Atlas 5 421               | CCAFS                      | WGS 1  | DoD   | Communications   | \$75M         |
| 6/28/2007  | Shuttle Endeavour         | KSC                        | STS 118  | NASA  | Crewed   | N/A           |
| 6/30/2007  | PSLV                      | Satish Dhawan Space Center | JEM RMS<br>Oceansat 2  | ISS Partner Nations<br>ISRO   | ISS<br>Remote Sensing  | \$20M         |
| 2Q/2007  | √ Ariane 5 TBA            | Kourou                     | * BSAT 3A  | BSAT  | Communications   | \$70M         |
| 2Q/2007  | Atlas 5 411               | VAFB                       | NRO L-28   | NRO   | Classified   | \$75M         |
| 2Q/2007  | √ + Delta 2 7925-10       | VAFB                       | * Worldview 1  | DigitalGlobe  | Remote Sensing   | \$50M         |
| 2Q/2007  | Delta 4 Medium-Plus (5,4) | CCAFS                      | WGS 2  | DoD   | Communications   | \$90M         |
| 2Q/2007  | √ Dnepr 1                 | Baikonur                   | * RapidEye 1<br>* RapidEye 2<br>* RapidEye 3<br>* RapidEye 4<br>* RapidEye 5 | RapidEye AG<br>RapidEye AG<br>RapidEye AG<br>RapidEye AG<br>RapidEye AG | Remote Sensing<br>Remote Sensing<br>Remote Sensing<br>Remote Sensing<br>Remote Sensing | \$9.5M        |
| 2Q/2007  | Falcon 1                  | VAFB                       | TacSat 1   | DoD   | Development  | \$7M          |
|  |                           |                            | * Celestis 5   | Celestis  | Other  |               |
| 2Q/2007  | √ Proton M                | Baikonur                   | * DirecTV 11   | DirecTV   | Communications   | \$70M         |
| 2Q/2007  | √ + Zenit 3SL             | Odyssey Launch Platform    | * Galaxy 18  | SS Loral  | Communications   | \$70M         |
| 2Q/2007  | √ Zenit 3SLB              | Baikonur                   | * PAS 11   | Intelsat  | Communications   | \$50M         |

√ Denotes commercial launch, defined as a launch that is internationally competed or FAA-licensed. For multiple manifested launches, certain secondary payloads whose launches were commercially procured may also constitute a commercial launch. Appendix includes suborbital launches only when such launches are commercial.

+ Denotes FAA-licensed launch.

\* Denotes a commercial payload, defined as a spacecraft that serves a commercial function or is operated by a commercial entity.

Notes: All prices are estimates, and vary for each commercial launch. Government mission prices may be higher than commercial prices. Ariane 5 payloads are usually multi-manifested, but the pairing of satellites scheduled for each launch is sometimes undisclosed for proprietary reasons until shortly before the launch date.